

CLAIMS

1 A method of producing an optical information layer on a substrate, the method comprising the steps of:

- 5 - spinning (430) of a solution on the substrate, wherein the solution comprises a fluorescent dye;
- contacting (440) a structured stamp on the solution and the substrate forming a structured layer;
- solidifying (470) the structured layer; and
- releasing (480) the stamp from the structured layer and the substrate.

10 2 The method of claim 1, comprising the step of casting the stamp from a mold; wherein the mold comprises a microstructure.

15 3 The method of claim 2, wherein the stamp comprises a rubbery material comprising polydimethoxysiloxane (PDMS).

4 The method of claim 3, wherein the solution further comprises a solvent and a polymer and wherein the step of solidification comprises diffusing a substantial part of the solvent into the stamp.

20 5 The method of claim 2, wherein the mold comprises one of a master shim and a Ni shim obtained from the master shim.

25 6 The method of claim 1, wherein the step of contacting comprises squeezing out the solution from under a bottom part of the stamp so that the bottom part contacts the carrier.

7 The method of claim 2, wherein the solution comprises an active solvent and wherein the step of solidification comprises curing a substantial part of the active solvent to a polymer network.

30 8 The method of claim 7, wherein the curing comprises irradiating the solution with UV-light.

9 The method of claim 1, wherein the dye comprises Coumarin-30.

10 A method of producing an optical information layer on a substrate, the method comprising the steps of:

- 5 - spinning (430) of a solution on the substrate, wherein the solution comprises a fluorescent dye;
- contacting (440) a structured stamp on the solution and the substrate forming a structured layer; and
- releasing (450) the stamp from the structured layer and the substrate.
- solidifying (460) the structured layer.

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11 The method of claim 10, wherein the stamp comprises a rubbery material comprising polydimethoxysiloxane (PDMS).

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12 The method of claim 10, wherein the dye comprises Coumarin-30 and wherein the solution further comprises:

- a polymer; and
- a solvent

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13 The method of claim 10, wherein the step of solidifying comprises drying the structured layer by evaporation a substantial amount of the solvent from the structured layer.

14 The method of claim 13, wherein the step of drying comprises elevating the ambient temperature.

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15 The method of claim 10, comprising the steps of:

- adjusting the concentration of polymer in the solution in order to achieve substantial optimal viscosity for the spinning, the contacting, and the residing step; and
- adjusting the concentration of dye in the solution to that of the polymer in order to achieve a substantial maximum efficiency in order to avoid quenching.

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16 The method of claim 10, wherein

- the polymer comprises one of polyvinylbutyral (PVB) and polyvinylalcohol (PVA); and
- the solvent comprises one of ethyl-lactate and ethanol.

17 A method of producing an optical information layer on a substrate, the method comprising the steps of:

- spinning of a solution that comprises a fluorescent dye on the substrate;
- contacting a structured stamp on the solution;
- 5 - residing the stamp on the solution until forming a structured solution, wherein the structured solution comprises lands and pits;
- releasing the stamp from the structured solution; and
- etching (300) the structured solution perpendicular to its surface until the thickness of the lands becomes substantially zero (310).

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18 An optical storage data disc comprising:

- an information layer that includes a fluorescent dye; and
- a substrate (406) on which the information layer resides; wherein the information layer comprises a structure of lands and pits (412, 416) and wherein
- 15 - the lands have a thickness of substantially zero; and
- the pits have a finite thickness.

19 The optical storage data disc of claim 18, comprising a multiple of information layers of which at least one information layer comprises a read-only memory.

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20 An apparatus for producing an optical information layer on a substrate, the apparatus comprises:

- a rotatable drum (520) on which at an outer surface a soft stamp (500) can be attached;
- a reticle (530) with a hole;
- 25 - an irradiation source (540); and
- means for moving a substrate with a liquid solution, whereby the substrate can be located in between the outer surface of the stamp and the reticle and whereby the substrate can be moved with a direction and velocity substantial close to that of the outer surface of the stamp, wherein

30 the irradiation source is placed such that it can irradiate the substrate with the solution through the hole towards the drum.